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10/581,333	05/31/2006	Alexander Bovyrin	42390P21485	6241

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EXAMINER
BITAR, NANCY

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _27 March 2009_.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1,4,6,7,10,12,13 and 17-23_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1,4,6,7,10,12,13 and 17-23_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _31 May 2006_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's response to the last Office Action, filed 12/23/2008, has been entered and made of record.

2.   Applicant has amended claims 1,7 and 13. Claims 2,3,5,8, 9,11 and 14-16 have been cancelled. Claims 18-23 have been added Claims 1,4,6,7,10,12,13, and 17-23 are currently pending.

3.   Applicants arguments filed 3/27/2009 have been fully considered but are moot in view of the new ground(s) of rejection necessitated by the amendments. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sawhney et al (US 2001/0043738).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1,4,6,7,10,12,13, and 17-23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Melo et al (Viewpoint Independent Detection of Vehicle Trajectories and Lane

Geometry) in view of Reno et al (Learning Surveillance Tracking Models for the Self Calibrated

Ground Plane) further in view of Sawhney et al (US 2001/0043738).

As to claims 1, Melo teaches a method of analyzing video frames capturing a 3D scene

over time to automatically generate a road map of the 3D scene (produces accurate trajectories

and estimates lane geometry; see abstract)comprising: detecting positions of objects in the video

frames(lane geometry can be estimated from uncalibrated but stable video sequences; section 1);

estimating 3D transformation parameters for the objects (estimate the lane geometry using

uncalibrated traffic surveillance cameras, see abstract) ; predicting heights of the objects based at

least in part on the 3D transformation parameters (vehicle length, section 1) removing outliers

from the predicted heights of objects to produce a filtered set of objects; using the filters set of

objects to repeat estimating the 3D transformation parameters and to repeat predicting the height

of the objects (section 4) .While Melo meets a number of the limitations of the claimed

invention, as pointed out more fully above, Melo fails to specifically teach Estimating road

boundaries of the 3D scene using a background image and the positions of the objects; Generating

the road map; Removing outlier pixels from the road map and estimating a height map for objects

moving on a road of the road map. Specifically, Reno et al. et al. teaches rather than relying on

labour-intensive calibration procedures to recover the image to ground-plane homography, the

system relies on a simple auto-calibration procedure to learn the relationship between image and

world by simply watching events within the monitored scene. Moreover, Reno et al. teaches

estimating 3D transformation parameters for the object (section 2-2.1; figure 1) and predicting the

height of the object (section 2.2). Note that the height model is derived from the optical geometry

of a typical visual surveillance installation. In addition, such an assumption enables the use of

simple but highly discriminatory models of the appearance of scene objects which indirectly use

the depth of the object to model its projected height. It would have been obvious to one of

ordinary skill in the art to use the auto calibration in Melo method in order to simplify auto-

calibration procedure to learn the relationship between image and world by simply watching

events within the monitored scene. Neither Melo nor Reno teaches the generating a height map

moving on the road of the road map. Specifically, Sawhney et al teaches estimating and

representing a refined surface shape as a height map associated with the selected planar surface.

Given the previously determined camera poses, these height maps may be estimated by dense 3D

estimation techniques from two or more observed images. The outcome of this process is a hybrid

shape representation that augments the polyhedral model with local shape variation (paragraph

[0075-0079] and figure 11) . It would have been obvious to one of ordinary skill in the art to

estimate a height map for objects moving on a road of the road map in the height model of Reno

in order to accurately obtain pose information. Therefore, the claimed invention would have been

obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 4, Melo teaches the method of claim 1, wherein detecting positions of objects

comprises applying a foreground object detection process to the video frames (A detected

foreground blob comprises a connected region having more than a certain pre-defined minimum

number of pixels (*Kmin*) in its area. A constant acceleration Kalman Filter (KF) is used to track

the blobs through image coordinate space, see section 3)

As to claims 6 and 12, Melo teaches the method of claim 7, wherein estimating road

boundaries comprises applying a region growing process to object positions to find pixels of the

video frames belonging to a road surface in the 3D scene; and removing outlier pixels from the

road map (RANSAC is robust to outlier trajectories produced by frequent vehicle lane changes,

undetected overlapped vehicles and noise in the video sequence. section 4; page 459)

The limitation of claims 7,10 has been addressed above.

Claim 13 and 17 differ from claim 1-6 only in that claim 1-6 are method claims whereas,

claim 13-17 are system claims. Thus, claims 13and 17 are analyzed as previously discussed with

respect to claims 1-6 above.

As to claims 18 and 20 and 22, Sawhney et al teaches the method of claim 1, wherein

the objects comprise a representation of a human being in the video frames (figure 12, 1204) .

As to claims 19 and 21 and 23 , Sawhney et al teaches the method of claim 1, wherein

the estimating the road boundaries of the 3D scene comprises filling a uniform color region

starting from a foot of a position of an object of the objects and stopping when an edge pixel of

the background image is reached (paragraph [0076-0080]).

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041.

The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nancy Bitar/

Examiner, Art Unit 2624

                                                    /VIKKRAM BALI/

                                                    Supervisory Patent Examiner, Art Unit 2624